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ironmental study area: a guide

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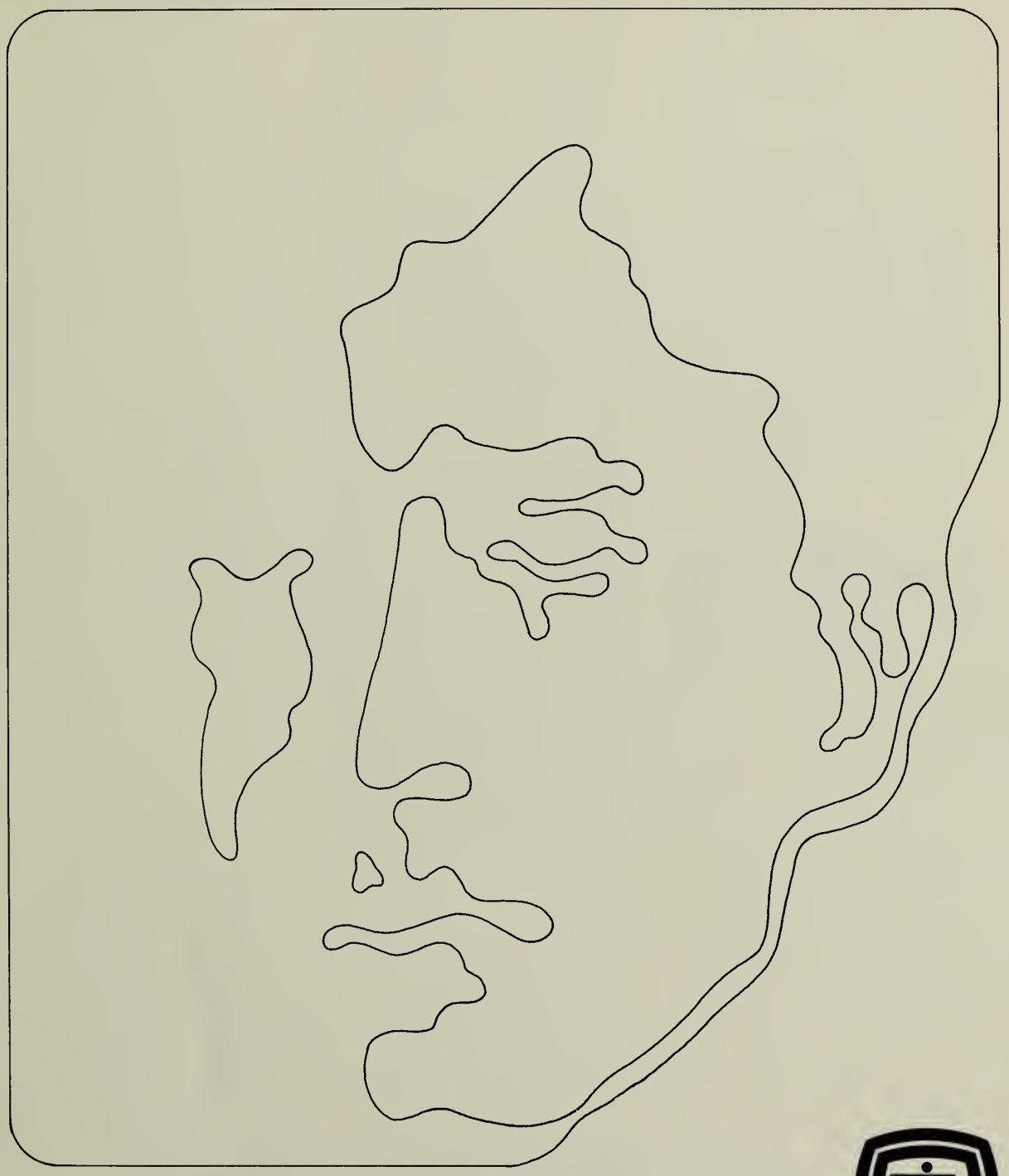
ENVIRONMAN is the symbol associated with the National Park Service environmental education programs.

It represents man's growing awareness of his total involvement in the environment, his responsiveness to and responsibility for the world around him.

national environmental study area: a guide



U.S. DEPARTMENT OF THE INTERIOR • NATIONAL PARK SERVICE
OFFICE OF ENVIRONMENTAL INTERPRETATION

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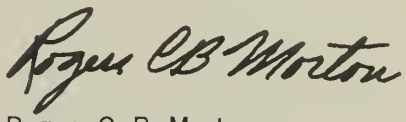
foreword

A decade ago the word "environment" meant little more than the physical world and its natural resources. Today, however, it means not simply air and water and soil and sun—but people, their society and culture.

In an age of growing environmental concern, the National Park Service areas find themselves as inevitable crossroads between educators and resource managers, places where the talents of each merge to form the basis for environmental awareness.

The National Environmental Study Area program was developed to begin satisfying the nation's need for an environmental ethic. The children of today have an opportunity through this program to grow with an increasing and probing consciousness for the conditions under which their future environment must survive. Not simply can natural resources be studied, but also their interrelationship with cultural processes. This is a prerequisite for total environmental learning.

Looking to the future, the importance of environmental education *today* is overwhelming. Without a growing public awareness and sensitivity, even the National Park System—set aside to preserve our natural and cultural heritage—will be in danger. As national parks and areas like them become more and more the focal point of an accummulation of societal concerns and ideas, they plead, even in a process of self-protection, that environmental education start now. The National Environmental Study Area program can lead the way.



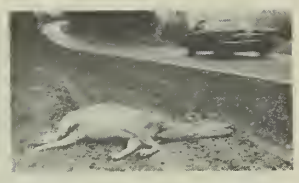
Rogers C. B. Morton,
Secretary of the Interior

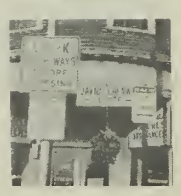
a word of caution

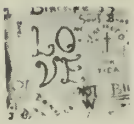
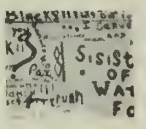
This environmental education program works because it relies on local, grass-roots commitment, and because it requires a viewpoint broader and more flexible than that often thought adequate. It will not simply run by itself, as if the values, ideas, and techniques necessary for its success already exist throughout the country. If that were so, there would be no program because there would be no need.

It is apparent, instead, that nobody now has all the answers to environmental issues, nor is anyone likely to have them in the imaginable future. Those who are concerned about the quality of life will have to take risks and work hard to improve it. Do not think otherwise.

Equally apparent to concerned individuals, of course, will be the value of this work and its satisfactions. Each of us has his personal priorities. You may find it useful to evaluate yours before continuing.



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contents

Foreword 3

Word of Caution 5

Introduction 8

What is a National Environmental Study Area 10
Program 10
Program Materials 11
Site 14

NESA and Environmental Education 18
A Word of Explanation 18
A Working Definition 22
NESA as Process 26

The Environmental Strands 28
As a Philosophy 31
As Open-ended Inquiry 35
As Simple Classification 37

Do It 38
Establishing a NESA 39
Using the Community 39
The Steering Committee 40
Community Council on EE 42
On-site Workshop 43
Program Maintenance 45

Appendix 46
Key People/Organizations 46
Regional or National Assistance 52

Bibliography 53
NESA Application 57

introduction

The National Park Service believes that environmental studies—environmental education—is an urgent national need. Consequently, the NPS has established three programs as steps toward fulfillment of its responsibility to aid in the promotion of environmental education.

The National Environmental Education Development (NEED) is a curriculum-integrating program. It is a process for developing environmental awareness, understanding and values for kindergarten through twelfth grade students through the use of existing course studies at participating schools. The National Environmental Study Area (NESA) program provides *physical* sites, both natural and cultural, where a student can apply his classroom learning experiences to the actual surroundings outside the classroom. The National Environmental Education Landmark (NEEL) program recognizes outstanding NESAs as sites with nationally significant environmental characteristics and an exemplar environmental education program.

An environmental study area (ESA) is a place whose characteristics lend it to the study of the processes and dynamics of man's whole environment. A NESA, upon which this book concentrates, is more than a good place for environmental education—it is distinguished from an ESA in that it has a specific, active program of environmental education.

The National Park Service now makes its lands and facilities available for use as NESAs by schools—which also recognize the need for environmental education.

But the NPS also encourages the use of non-Service lands as NESAs. If a place and its program of environmental education are of sufficient quality, they may be designated as a NESA and listed in the NESA Catalog by the U.S. Office of Education, Department of Health, Education, and Welfare, which, with NPS assistance, maintains and evaluates the catalog.

This guide offers a hand—or a push—to teachers and resource managers who are interested in establishing National Environmental Study Areas (NESAs), or who are interested in receiving NESA recognition for their on-going ESA programs. If others find some of what follows useful, so much the better. But the National Environmental Study Area program depends upon the concern, dedication, and imagination of teachers and resource managers.

The program depends upon teachers because they are the facilitators of education. A good teacher stimulates curiosity in his student while providing tools the student can use to pursue that curiosity throughout his life. The teacher brings continuity to the learn-

ing process, enabling the student to see the interrelatedness of what he is learning; enabling him to see that he, too, is part of that interrelatedness. In the NESA program, continuity is crucial, because without presite and post-site classroom follow-up, on-site visits to an environmental study area are little more than picnics.

The resource manager makes the study area available for use by students and teachers for environmental education. He is the manager or proprietor of land, facilities, or processes which possess educational potential—characteristics that make the dynamics of the world environment evident and observable.

Although many interpret their resource to the public, resource managers are not teachers. In the NESA program they are not expected to be. But they do contribute technical assistance. They make available to the teachers their knowledge of their resource, its processes and its problems. Resource managers now assisting the NESA program know that the long-term survival of their resource depends upon the existence of an enlightened citizenry able to function responsibly in an era of unprecedented change. Environmental education, they realize, is the key.

This guide, then, will assist teachers and resource managers who want to establish and maintain a National Environmental Study Area. It will outline the characteristics and procedures of that program. It will say a few words on environmental education—its nature, philosophy, and purpose. Techniques and a methodology will be discussed. A bibliography of useful or provocative publications and films will be found at the end.

Properly developed, a NESA program in your locality can influence the environmental awareness values and behavior of students; it can adapt to the conditions and needs of existing curricula, helping to reveal those curricula as interdisciplinary wholes; it can aid resource protection and environmental management; and it can serve as a focus point and a catalyst for responsible environmental action in your community.

what is a national environmental study area

A National Environmental Study area is a physical *site* or land resource which is used for an active *program* of environmental education. The ideal site, though, is not reserved exclusively for environmental education. Most sites continue to be used as they were before they received NESA designation. In fact, multiple usages enrich a NESA's educational value, since multiple interactions within a NESA make the environmental processes graphic and observable, with clearer applicability to the student's day-to-day life.

PROGRAM

Although possible site selections have appeared limitless—ranging from garbage dumps to wilderness areas—the program itself must *be* unequivocably *environmental education*. This point must be stressed since that term has been abused lately through fast and loose definitions. (Nature study programs, or even outdoor sports activities, for example, are being fashionably labelled environmental education.)

For a program to receive NESA designation, it must at least comply with the definition of environmental education found in the 1970 Environmental Education Act. That definition reads:

> The term "environmental education" means the *educational process* dealing with man's relationship with *his natural and manmade surroundings*, and includes the relation of population, pollution, resource allocation and depletion, conservation, transportation, technology, and urban and rural planning to the *total human environment*.
>
> (P.L. 91–516, Sec. 3(*a*)(2))

It can be seen in the Act that environmental education is distinctly broader than, for example, conservation education (the study of the wise use

of our natural resources), or outdoor education (a technique which uses the outdoors as a classroom for teaching about nature or about outdoor recreational activities).

The insights and techniques of these educational forms built much of the foundation for environmental education. Yet, since the approach of environmental education is so different, it really has very little similarity with these two educational forms with which it is sometimes confused.

PROGRAM MATERIALS

Each NESA has materials and techniques developed exclusively to take advantage of the unique potentialities of the site. These include:

A Teacher's Guide, designed to alert the teacher to the educational potentialities of the site. Some of the characteristics of a typical guide would be:

- a discussion of environmental education process and philosophy *as it relates to that site,* including the critical interrelationship of on-site activities with classroom (pre-site, post-site) activities and the existing curriculum;
- sample lession materials, workbooks, or techniques designed to help the teacher to feel comfortable in an unfamiliar, open-ended teaching environment, to aid in the fulfillment of the teachers' professional needs and requirements, and to reveal the Strands as facilitators in all aspects of inquiry and communication;
- a discussion of the "Environmental Strands"—the five conceptual/perceptual tools used by the National Park Service to get an interdisciplinary grasp on environmental dynamics—and *an application of the Strands to the specific NESA;*
- a descriptive narrative of the processes at work within the site, its natural and cultural systems, and the relationships these systems have to those systems beyond the NESA's borders, with special emphasis on the effect man had/has upon these systems, as well as the effect these systems had/have upon man;
- a list of site characteristics and resources;
- a list of resource people available to provide technical assistance or supplementary help;
- an outline of regulations, safety precautions, and dress and equipment suggestions;
- and, a bibliography.

A brochure available as a hand-out, stating that the particular NESA is a part of a national program of interdisciplinary environmental education, and that the site is available for use.

A workbook for students. Lessons, games, and activities for students, including places to record impressions or feelings, and room for still-to-be-inspired poems, observations, or drawings. Incidentally, in some areas, this is thought to work well; other programs discourage it because it smacks of the aura of lab-books, best left, it is said, in labs.

In addition to the materials prepared specifically for an individual NESA, materials which should aid in various other aspects of NESA development are now available through the National Park Service. They are:

A Guide for Planning and Conducting Environmental Study Area Workshops, funded by the National Park Service, and prepared through the National Education Association. This guide is intended to provide resource managers and educators with the basics they need to know to conduct a successful environmental education workshop. (See bibliography.)

Environmental Education/Facility Resources. Prepared by the Educational Facilities Laboratories, Inc., in association with the National Park Service and the National Education Association, this guide identifies facilities throughout the nation currently being used for environmental education. In addition, it includes a strategy for the identification and use of places with potential for environmental education. (See bibliography.)

The Benchmark Project. This project is being developed as an aspect of the NESA program. Inexpensive devices and techniques are being analyzed and made available to individual NESAs as a means of monitoring change and making it comprehensible. These devices and techniques are primarily educational tools, but they may also be used as real measurers of changing environmental quality. Change is at once a most significant and most elusive principle of environmental awareness.

The Best of NESA reports. This is an information clearinghouse and dissemination project. The undertaking will edit and distribute nationally, on a regular basis, the most excellent ideas, techniques, and materials that come in to Washington from individual NESAs, so that all of us may benefit from these. In addition, the Washington staff will circulate news of other groups' programs, signficant new publications, films, etc. Early reports will include model strand activities; site evaluation, selection, and inauguration techniques; environmental management practices; and selections from teacher guides.

SITE

Proposed NESA sites are evaluated by educators and resource managers to determine:

If they are close enough to schools to make their use realistic for either classes or teacher workshops.

If adequate parking, toilet, and water facilities exist.

If the sites illustrate the impact of man.

If the sites can withstand the considerable impact of regular use by classes. (No area, of course, can be frozen. Change will occur. So much the better, since the observable change is an excellent learning experience. But avoid the

use of particularly fragile areas for NESA development.)

If the sites possess educational potential.

You will recall that this last point was made in the Introduction: a NESA site must possess educational potential. But what actually *is* potential for environmental education? The Environmental Education Act, quoted above, spoke of a process of studying relationships in the total human environment. *Accordingly, a site with educational potential is one which accelerates this process; examples of the relationships found throughout the total human environment exist at this site in unusually striking relief.*

The clarity of these relationships is so strong that the environmental dynamics are apparent and observable. In a word, educational, since knowledge of the relationships is transferable and useful in all aspects of living.

You have seen it; it has happened to you. Certain places startle the observer, for him to ask *questions:*

"How did *that* happen?!!," OR, "Why did it happen?," OR, (sometimes) "Why does this place make me feel the way I do?"

Once the observer starts asking questions, begins losing his cultivated reserve, the site has begun to pull him in, to educate him.

Yet this not always enough. He may dismiss the experience as an isolated phenomenon. (Most of what does not fit into our theories of the world is dismissed as isolated phenomena.) He needs a tool, a framework for observation.

The following sections will lay out such a framework, along with its rationale and resulting philosophy.

These are comments by an NPS Environmental Education Specialist on the signficance of the Fort Point NESA which is located beneath the Golden Gate Bridge.

Fort Point ranks with Cabrillo National Monument in significance for environmental education and environmental interpretation. Its command visually of the San Francisco Bay is perhaps not as imposing as that of the latter over the San Diego Harbor. Yet the elements have much in common: a "moment-event-segment" of history which acts as a window to, a focal point for, the interrelationship of man with his environment.

In the broadest sense the Fort guards the confluence of river, sea and land. Biologically there is no more dynamic situation: we have the combined productivity of bay, estuary, marshlands, mudflats, tidal waters, fresh water and salt—and the land itself.

We have, in addition, the Harbor —maximum productivity, maximum protection for the species these circumstances favor. Which bring us to Man.

These elements combined are why we are here, why our cities of Oakland and Berkeley and San Francisco are here.

And these elements are why the Fort is here. Ecologically, we might say "competition for this niche" became significant enough to suggest eventual differences of opinion —and traditionally our species has settled many differences of opinion through arms and military defense. Rather similar to—although more deadly than—fiddler crabs who boundary their domains with mud balls and rattle their chela at one another when aroused.

We have also and more precisely the Golden Gate itself, with all the

name implies. Here headlands, currents and meteorology set the stage for ships and commerce and exploration for some of the most profound and far-reaching activities of Man—the Spaniards, the Gold Rush, the route to the Far East and so on. Every ship that passes before the visitor is a testament to this dynamic: the interrelationship and continuity of Man, with man, and time.

nesa and environmental education

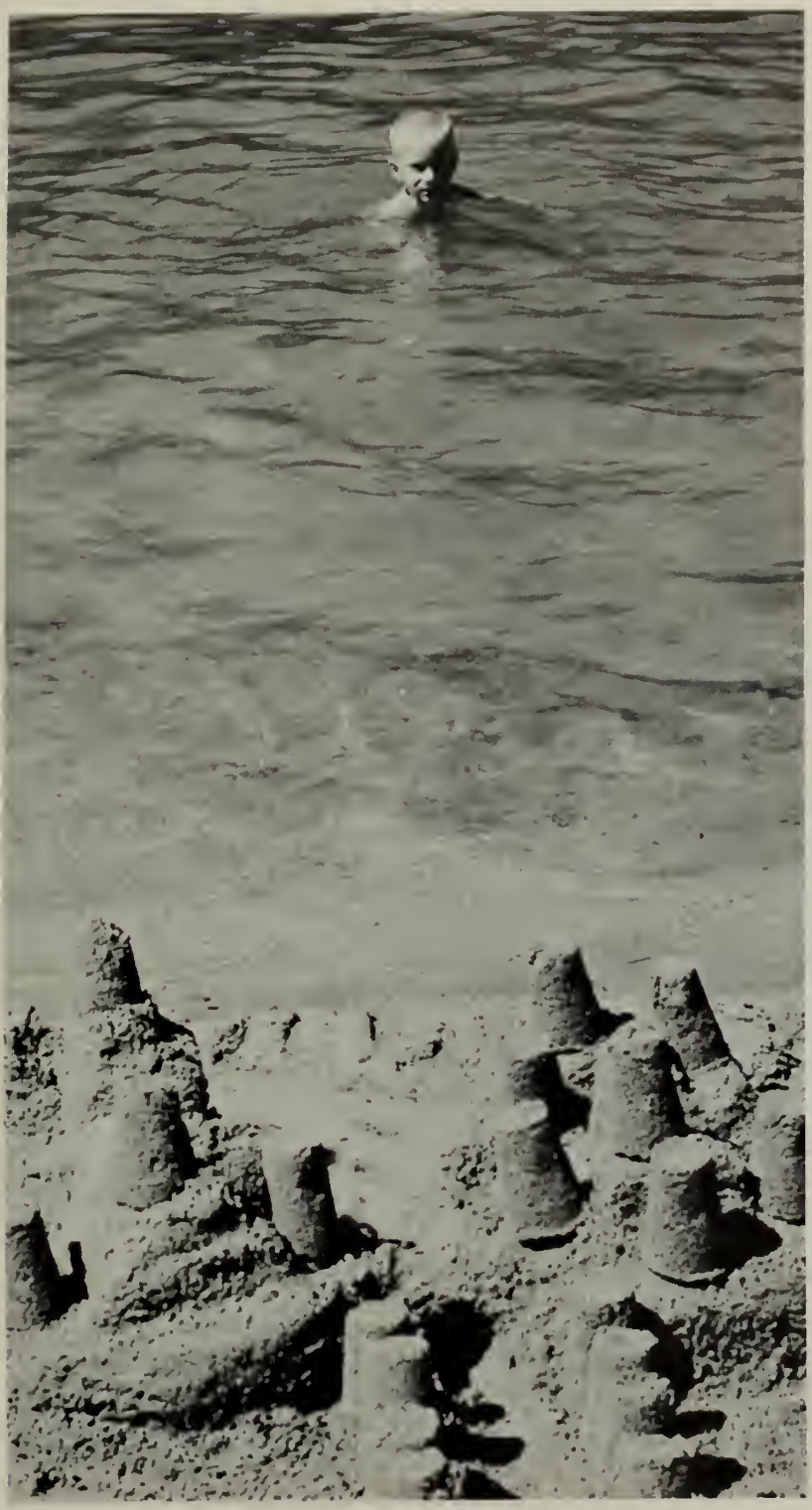
A Word of explanation

Stop and think a minute about the phrase, "side effect." Our use of that phrase says a lot about the kind of world we think we are living in—and about our need for environmental education. It is not what "side effect" means that is important, but what it presumes.

There is no such thing as a "side effect!" Every effect is a *direct* effect. When you do something, no matter how minor, you set off an explosion of reactions whose often conflicting effects scatter in all directions. Each effect emanates directly from the original act, but the great majority of effects are ignored or called side effects *because they weren't planned for.* The effects you planned for you call your purpose.

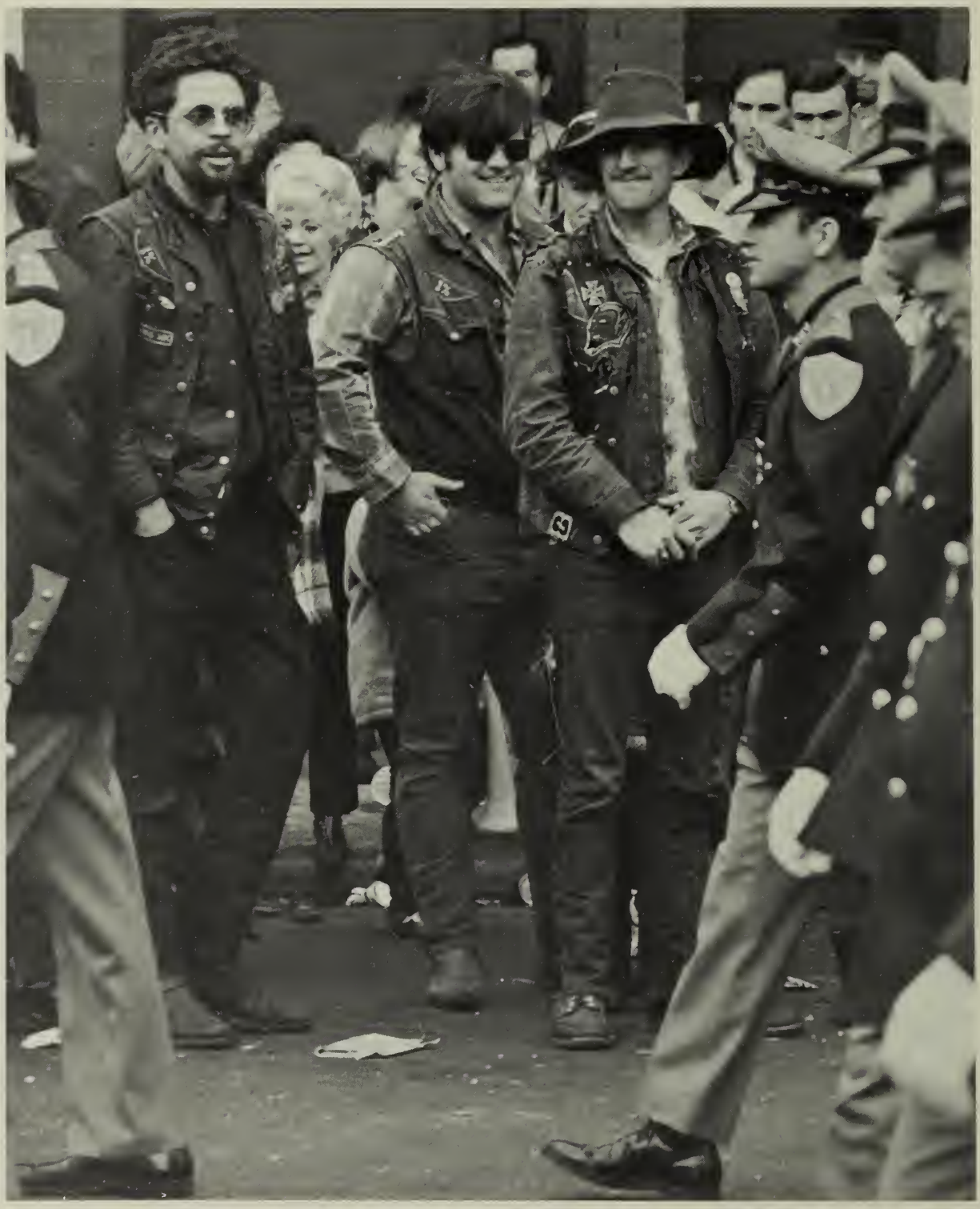
When we permit ourselves to plan and act with our thoughts only on the purpose we want to achieve, we do not see things as they actually exist. The world is simply not a well oiled machine whose task it is to carry out our every desire. It is complex and dynamic, with perpetually interacting factors. **The world is a process which man, as a factor, affects in complex and contradictory ways; it is a process whose factors affect man in equally complex and contradictory ways. Within process, all these factors and their innumerable effects create a highly interacting, constantly changing and evolving system.**

Viewing the world—process—only in terms of our immediate objectives—purpose—is a distorted and dangerous practice. We miss the big picture and see unnaturally isolated factors in a frozen world. True or false, reality or myth, the way man preceives his world will largely determine the way he feels and acts toward it and toward his fellow man. If his perception is sufficiently distorted, man's actions may become a threat to his welfare and, ultimately, his survival.



Non-process thinking can be as painful as it is difficult to avoid. Which of us hasn't seen some unforeseen consequence—side effect—suddenly "appear" and destroy our best laid plans? Or how often do we read of the failure of a massive project, all due, as someone inevitably observes, to some "quirk?" The National Park Service, as well as most other institutions, has experienced this sort of thing. In the past, roads have been built in parks with the intention of relieving traffic congestion, but with the actual result of worsening it; "improved conditions" attracted many more visitors than the new roads could handle, with another effect being a decline in the quality of the park experience.

As our understanding of process increases, we begin to see that the world constitutes a whole system. In this system, we find that if we push in



one direction, we affect the entire system. We find, for example, that if we depend upon automobiles for transportation, we have affected our politics, our foreign policy, our life style, art, value systems, concepts of friendship, our national and personal economy, and on and on.No one can say that all these effects are good, or all bad; man's finest works and values are inextricably related to world conditions we are ashamed of. *There are trade-offs in everything we do.* The unfortunate thing is that we never considered what kind of world we were building when we made our decisions.

It is time to start considering the world we are building.

Our human institutions, value systems, practices, and procedures are having difficulty keeping up with rapid interaction and change in technology, communication, medicine and science. As we become less able to cope, the troubling effects of our social conditions become increasingly apparent.

Like it or not, all these conditions affect all of us in one way or another.

Two basic approaches to these conditions have emerged. The first assumes that man will not survive, or maintain a life of any quality, unless strong societal controls are instituted. This approach maintains that basic freedoms interfere with effective environmental policies and practices; that individual freedoms lead inevitably to world-wide excess and, possibly, suicide.

The other approach holds that man can act with environmental responsibility without resorting to ideological, medical, or behavioral controls. In fact, this theory maintains that basic freedoms are indispensable. Without them, all of mans creativity and talents will not be tapped—and today every resource we possess is needed. So, systems and institutions must be devised which encourage the free circulation of new ideas and attitudes which develop within us a deeper perception of ourselves, and which give us the individual strength to avoid the seeming inevitability of living according to whatever seems fashionable during the time of our lives.

The National Environmental Study Area program is founded upon this latter theory. To live real lives in a real world, change and interaction cannot be rejected—we must accept them. We must develop a new framework for seeing, knowing and doing which lets us live lives of process in a world of process. We must create institutions—especially educational institutions—which are not rigid, but which are responsibly structured to evolve and adapt to the dynamic needs of our time.

A Working Definition

Environmental education is the process of experiences and observations which makes a person aware of his relationship to the total environment

and his responsibility to it. It is a life-long learning process which influences behavior patterns in a way which promotes a life of quality with survival potential. It is not a subject to be taught; it is a way of seeing the world which enables us to get a handle on where we are and where we are going.

Environmental education is man-centered, not because man is the center of the world, but because he is an indivisible part of world dynamics (a fact he is only beginning to recognize), and because he alone has the conscious ability to alter the world's balances.

It is man-centered because it is designed to heighten man's awareness and widen his options in forming behavior and value patterns.

Environmental education is man-centered because it is *education for living*. It is not education for science, or for philosophy, or for vocations, or for art, or for crisis. We do not use the environment to teach about history. We use history to teach about the environment. There is nothing shocking about this.

What is shocking is to see "environmental education" used as a gimmick to sell course content, to see, for example, a tree used to entice a student to do a series of math problems on circumference and radius. It is true, of course, that the motivation of many students improves markedly by the use of this technique. Yet, courses like math and history are presumably offered because they have a use, a purpose in the world in which the student will live. Use math for a purpose—perhaps as a tool for discovery or analysis. After all, the same skills are used and developed. And with a *real* use, the motivation is even greater. After all, environmental education is not a visual aid. Environmental education is for living.

NESA As Process

The NESA program is intended to be a flexible, open-ended program which adapts to process. NESAs are places where the student is exposed to a microcosm of world process. Inquiry is open-ended; rigid methodologies are broken down. In a NESA, the lines between disciplines begin to disappear—all of what is being learned reinforces all else and becomes interlocked.

The NESA does not exist in a vacuum. Just as everything on the site is interrelated, so is the site interrelated with everything outside it. The same processes which become apparent and are used at the NESA are interrelated and used in all clasroom activities. The concerns and interests of the student are linked to the NESA, the NESA to the school, the school to the community, and the community to the world.

Local resources are tapped. The practices and procedures which exist in the community can serve as models for study and participation. Look at how and why people do what they do—including what they did not do or did not consider, and why. And don't forget to study your *own* procedures.

Study, for example, the community response to your desire to establish a NESA.

- What did you have to go through to do it?
- Where did you receive support, where opposition?
- How do the political processes in the community facilitate or hinder new programs or ideas?

Be sure to look into the zoning or land use practices.

Any number of things which take place in the community can be used as educational models. Don't neglect the practices of the resource where your NESA is located.

- What are the maintenance procedures and priorities?
- How and why were they set and determined?
- What is it about the nature of the resource or its needs that encouraged the resource manager to help establish a NESA there?

The Best of NESA project is another attempt to keep the NESA program in tune with a world of process. Even though most of the action in the NESA program takes place on the grass roots level, (which is one way of plugging into the process), the program will become much more sensitive as all the local ideas and insights are circulated nationally. The NESA program will continually evolve.

This is an administrative risk, of course. Complete control of such a program cannot reside in one place. Only in this manner can the program remain real and honest.

Once process is recognized, tight control over lesson content ends. The students must be trusted. The teacher must be trusted, for that matter, by the students. He must trust himself. In an open-ended atmosphere, the teacher must be willing to say, "I don't know."

Everything is not known at the NESA, nor will it ever be. For the teacher accustomed to exercising total control over course content and process, the open-ended NESA atmosphere can be intimidating: *every* name is not known, *every* system is not defined, *every* process is not understood. If this condition is considered a risk, it is nonetheless a risk which must be taken. Otherwise, inquiry will be directed

only toward those things the teacher already understands firmly, and the student will be less likely to assume individual responsibility for his own learning. In a world of process—a world of rapid change and interaction—more than this is required of education.

So if you, as a teacher, are worried that you haven't complete mastery over, say, every name or label of everything at the NESA site, don't be. The ecologist cannot be expected to know everything the historian knows, or vice-versa. Anyway, as all teachers realize, knowing a name is not the last word in understanding.

Sometimes names can actually be hindrances; we've all seen people ask the name a thing has, get it, and then walk away contented while ignoring the process, ignoring what is actually going on. Names can be a barrier to education when a specialized vocabulary or an esoteric taxonomy creates an unbridgeable distance between the interested person and the expert. The following section, "The Environmental Strands," outlines a technique which can be used to analyze processes prior to the acquisition of enormous vocabularies or taxonomies.

None of this is to say that names are useless. Properly used, names are an exceptionally convenient, useful shorthand in communication. They can also be beautifully descriptive devices which vividly capture the essence of a thing in a word or two. But avoid using names as a prerequisite to understanding, a cover for process, or a barrier to curiosity.

Two final points

We must continually remind ourselves that people learn in accordance with what they do or see in the environment around them. As teachers or resource people, we are part of the student's environment, part of the process. Think often about what that means.

Finally, the highest form of environmental awareness involves the ability to see ourselves in the process—to recognize clearly what our cultural perspective (bias) is, and to realize that it, too, is interrelated with everything else.

the environmental strands

It is very well to say that the environment is a total system—including the natural, the cultural, and the perceptual; there is no doubt that this system is a dynamic process. It follows, of course, that education must be student-centered, curriculum-integrative, interdisciplinary, and personally involving. But it cannot be expected than an educational system can respond to all things—or, especially, that a child can develop an awareness of the total environment—without a framework for seeing, feeling, and knowing.

Most frameworks are methodologies or system of inquiry developed for specialists. They are rarely truly interdisciplinary. They ofter require special skills, vocabularies, and research techniques. It is unlikely that they are student-centered, or that they easily reveal their philosophical premises. Most significantly, they usually have very little to do with process.

The Environmental Strands are used by the National Park Service as a framework for open-ended, process-oriented environmental education. None of the Strand concepts are new; in one form or another they have been used throughout recorded history. So much the better.

The Strands are non-ideological. That is, they do not support any monolithic theory of the universe. They are intended to facilitate process, not to dictate the kind of form it will take. Although the Strands do not assert a structured ideology, they do assert that the world is process. To the extent possible within a world of process, they are constants.

The Strands are flexible because they are interdisciplinary perceptual/conceptual tools which can be applied to all things within the total environment.

The Environmental Strands are:

Variety and Similarity. The differences and likenesses which occur among all living and non-living things, conditions, and states.

Patterns. Systems or perceptions of systems of structure, function, behavior, and design of things living and non-living, physical and abstract, cognitive and affective.

Interrelation and Interdependence. The dynamic of relationships and relativity which exists among all things.

Continunity and Change. The dynamic of form in time which exists among all things.

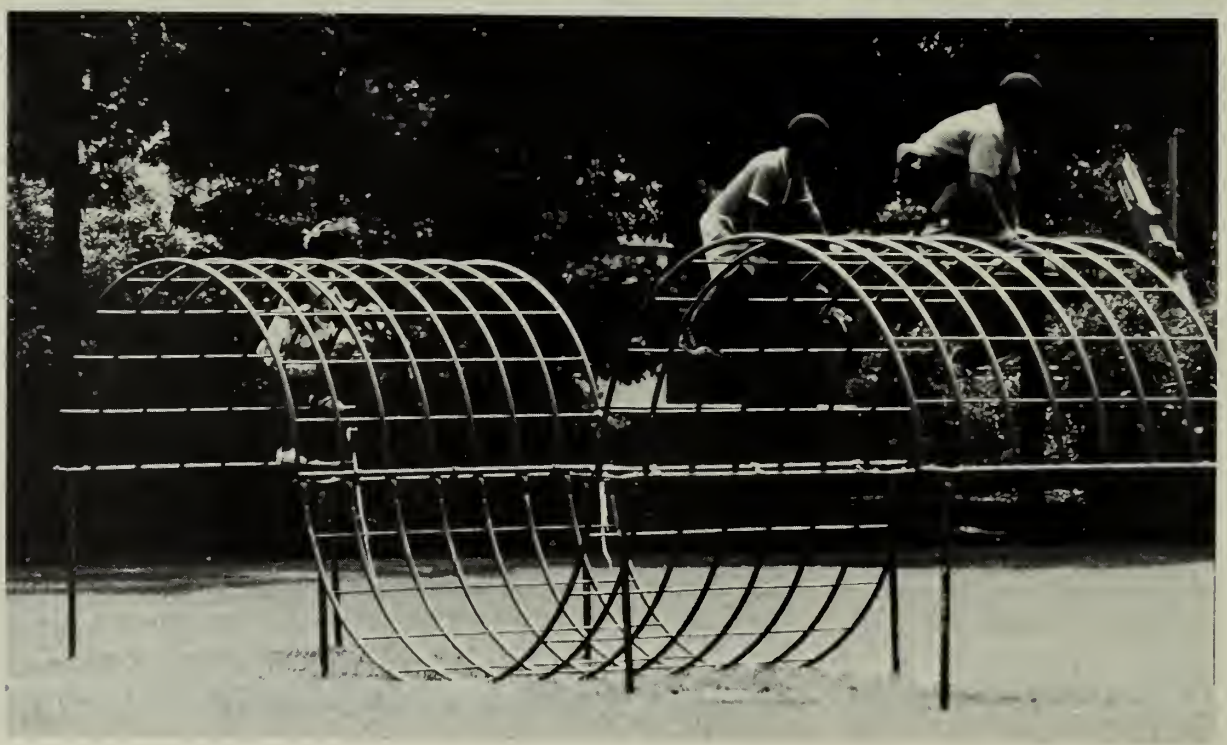
Evolution and Adaptation. The process of survival or the failure to survive of all things, in terms of time (continuity and change), and interaction and relativity (interrelation and interdependence).

These definitions of the Strands are cerebral and some-

what abstract—such is the nature of universal concepts. Experience has proved that they are flexible, and can be adapted to any learning experience or need. They even can be used as a planning device. They can be useful at any level of sophistication for viewing whole systems or processes. Remember, in environmental education this is a necessity since, unlike a curriculum composed of logically organized subject matter, the total environment surrounds the student at all times.

The Strands can be disastrously misused. The danger inherent with any methodology is that the methodology can be used as *a thing in itself, for its own sake*. There have been unfortunate examples where the Strands were taught, as a subject, instead of *used* to integrate disciplines or to understand process. Other times, students were told to memorize and parrot them for exclusively didactive and non-student-centered purposes. Avoid these dangers. *The Best of NESA* will, of course, include examples of use and thinking about the Strands.

Perhaps the best thing about the Strands is that the student can use them as a reference point to interrelate the things he knows, sees, and feels in his own life with all his future experience and education. It is fairly clear that the only way people achieve higher levels of understanding



is through metaphor—*understanding new things in terms of the old.* Otherwise, people are reduced to "learning" information—facts—without new awareness.

There is one thing about the Strands never to be forgotten: The Strands exist *simultaneously* in all things at all times. You will find that, when using the Strands, one irresistably leads into the others. Often one becomes indistinguishable from another. The Strands always reinforce each other. This is as it should be. In a world of process, it is inevitable that an honest framework is as dynamic as the world it views.

The Strands may be used many ways. A few categories of use follow.

As A Philosophy

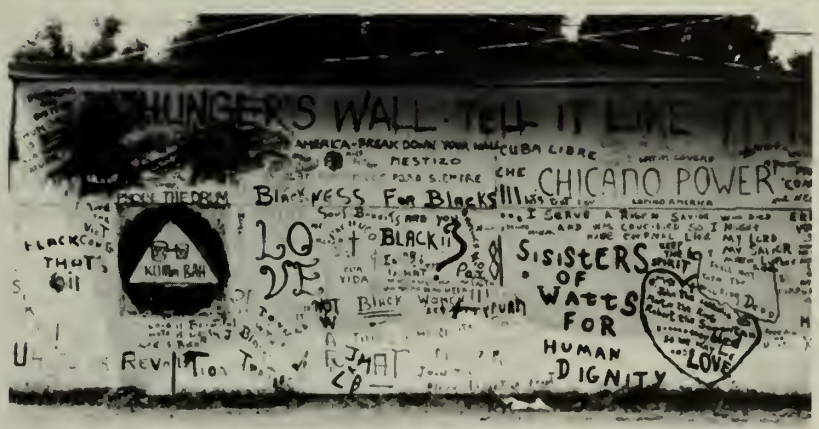
As characteristics of "truth" in the total environment, the Strands are for some a philosophy. In the on-going, dynamic world they describe, the Strands have definite implications for living, seeing, and doing.

For example, in *Variety and Similarity,* the survival value of variety is emphasized. Variety is more than the spice of life; it is often life itself. Species depend upon variety of genetic possibilities for survival. Governments depend upon fresh ideas, insights, approaches and alternatives for their viability. The richness of a culture is a product of the variety of its art forms and life styles—in some cases manifested in cosmopolitanism, in others, in the depth and complexity of the development of a form. An educational system is successfull if it develops individual creativity, if it recognizes that no single approach to learning will tap the potentialities of every student.

If there is a survival value to variety, then the elimination of variety is dangerous. If only those species whose characteristics man approves of, for example, are permitted to exist, then this overspecialized animal might be unable to adapt to a suddenly changed environment.

If a government or an educational system forces conformity to one world view, its society will probably stagnate. If the art world discourages or represses innovation, decadence often follows. If a society is intolerant of other religions, life styes, or value systems, the society will suffer.

The Strand, *Patterns,* is of special significance in a philosophical approach. More than any other, patterns help us understand the nature of man and his perception.



Patterns say something—not only about what we see, but *how* we see it. By analyzing our perception we come to understand our place in the total environment, we learn what our cultural premises are, and we discover what aspects of the world we are sensitive to.

From these we can see what the basis of our society is, how ours is similar to or different from other societies, and how our values and envir-

onmental ethics relate to the demands of natural patterns.

We can see that a certain view of the world is becoming prevalent. Today, for example, conditions, things and ideas are current which support the belief in the interrelatedness of all things: systems analysis, eco-awareness, cybernetics and communications, the theory of relativity, gestalt psychology, increasing Eastern philosophical thought in the West, books

like *Understanding Media* and *Future Shock*, changes in what constitutes job satisfaction—from goals like money and status to processes like working at something you enjoy and personal fulfillment—and even the NESA program. Recognizing that it is all a pattern, and that other patterns convinced people of past civilizations of things which sometimes did not exist, we may analyze the current pattern to determine if it is essentially merely a characteristic of our culture, or really a reflection of reality.—Try it yourself, and see what *you* think.

As we begin to become aware of what patterns we see, we learn what we don't see.

We learn what we take for granted; we begin to become aware that we saw only what we were looking for; we discover alternatives we were never aware of before.

Patterns include: scientific theories, music, language, how our society functions, historical interpretations, values, attitudes, and politics. These things are normally difficult to see beyond. As a Strand, patterns help us to do this, and to live what we see.

Interrelation and Interdependence and *Continuity and Change* are the dynamics of the world of process. Although dynamic, ours is also a cohesive world, because change and interrelation do not appear from nothingness—they exist alongside continuity and interdependence.

Only at our peril are change and interaction ignored or opposed; similarly, we can never act as if we, or the things we affect, are in isolation. Education must be designed to facilitate change—it cannot be purely didactic, it must be a base for a life of learning. At the same time, education cannot promote the idea that "progress" is good for its own sake, or that there are no lessons or values of the past applicable to the present and future. Neither can our actions ignore interdependence; if our culture or way of life is not responsibly based upon biophysical realities—the web of life—its survival is seriously threatened.

No content material is irrelevant in education. Irrelevance exists because things are seen out of context, in a vacuum. If a thing is "taught" in a way which ignores continuity and interdependence, if it is not student-centered, *if it does not reveal its relationships with the student's life, it is irrelevant.* A child would be better on his own. Nothing can be *honestly* described in isolation—or taught that way.

Evolution and Adaptation describe the survival process. The Strand is surely as applicable to social and political survival as to biological survival. Through it, we see the insistence of the needs of time and circumstances. And we understand the consequences of the failure of evolution and adaptation. The implication of the other Strands interrelate here as a guide to the pursuit of a real quality of life.

The following is a discussion of Evolution and Adaptation which appears in the Homestead, Nebraska, NESA Guide.

Evolution and Adaptation: The phenomenal change in argricultural methods since 1862 would certainly seem to illustrate the evolutionary process. It is tremendously speeded up. Homesteaders came here with tools used by man since Biblical times and ox power. Changes took place that ordinarily would take hundreds of years. No one can say how long since nothing of the sort ever happened before. Once the farmers had devised ways of coping with huge portions of arid land, with machinery, irrigation, and chemicals, adaptation of methods to neccessity became a rapid process. The question is who is adapting to what. The environment can be expected to adjust itself to the dominant species to some degree, but lately man is adapting his environment, or attempting to, far more than himself.

One aspect of evolution can be observed here in a negative way.

Life forms adapt or die. Some species of wildlife common at one time are either sparse or nonexistent in this region now. Buffalo, elk, grouse were once common here.

By abandoning the countryside for the urban scene, man is proving that he can adapt to a completely man-made world, or so it seems. It often seems that he transfers his primal urgings to a new location or even retrogresses, as when a crowded urban environment nurtures street gangs not unlike primitive tribes.

One aspect of urbanization has far-reaching implications. Evolution and Adaptation require a sensitivity to the environment in order for the organism to react. Man's extraordinary ability to adapt to changing conditions is based on his sensitivity; which is not quite the same thing as analytical intelligence. Survival in modern life seems to be dependent on developing a degree of insensitivity—to crowding, to noise, to tasteless food and surroundings. Not to mention insensitivity to mass killing.

No species can survive long by violating its basic mechanism for survival. The purpose of the NESA is to help strengthen this sensitivity.

AS OPEN-ENDED INQUIRY

The Strands are also useful as an outline from which to set educational objectives, as a system to organize our thinking, planning, and inquiring. They even can be used to help us plan our NESAs or to set up the program. *Best of NESA* will include examples of this.

Thinking of the Strands in sequence, as a simple inquiry system, we see that they have a certain logic; they progress from the simple to complex and are cumulative.

As inquiry they are:

Variety and Similarity—the recognition of each organic or nonorganic thing. A classification is derived by noting similar characteristics in distinct objects. Once a classification is made, an object's

Patterns can be identified. What is the pattern of its design? of its function? (What does it do?) of its organization?—This functional pattern leads directly to

Interrelation and Interdependence—How does a specific variety interact with air, water, earth, and other populations? As that variety interacts, it is subject to

Continuity and Change. Anything that exists goes on, subject to the constant change that every organic and inorganic substance—no matter how minute or how great—is undergoing as a result of interacting with the air, water, earth, other populations. As it continues to change, it is constantly undergoing

Evolution and Adaptation, according to how it fits into the pattern of existence. If a substance does not adapt, it evolves through continuity and change into a new Variety with a new Pattern of existence. (Or it fails to survive completely and disappears.)

Let's try this out on a NESA:

Step 1: Variety and Similarity. This is the "getting acquainted" stage, where the students get to know the elements in this restricted environment, starting with sun, air, soil and water. The students might even experiment with and discuss their own perceptions, likes and dislikes.

Step 2: Patterns. Now that the students have some idea of elements, let them see how they are arranged. How can they classify what they see and think?—Important concepts here are those of area and zones—geographical and mathematical concepts—and the hinting of more complex boundaries of territory and influence. (Maps, graphs, and even Venn diagrams might be useful.)

Step 3: Interrelation and Interdependence. Now let the group discuss what it has already, undoubtedly, observed: that no one thing stands alone and that every area borders on another. In short, that all we have described up to now interrelates.—How *does* each thing act upon another? Depend upon another? (As a hint, have the students look at the *edges:* the field, forests, streams, roadsides, building, or where two animals' territories overlap (including man's). This is where things happen.—Or reverse the process: look for edges *where you* see things happening.)

Step 4: Continuity and Change. Now the students should look for evidence of the time element. This can mean cycles of all kinds: day and night, tides, seasons, wet and dry times, birth and death. What things persist in our world? What things change? Is there a natural recycling? Is matter or energy destroyed? How may the importance of something change with time?

—These are the ideas of which history is made, also. And the players—the elements, the times gone before—have much in common with life today. We have new problems, but we also have old ones. Once away from the NESA, the students can look into some actual lives and times that have changed and consider why.

Step 5: Evolution and Adaptation. "Evolution" has Darwinian tones to most people, but it also means, "Where are we headed?" And perhaps also asks, "Why?" Educationally, this Strand recaps all we have discovered about our environment in the first four Strands. Now the students might consider how the past set the stage for the present, and how today might determine tomorrow. Have them speculate what some day may be on the spot where they stand at the moment.

Of course, we hope that the teacher will be drawing on this common experience with his students for many days to come—that may be its most valuable aspect; the having "lived together."

This framework may suggest to you that much of this is extraneous or too difficult to use at your level. If so, then be selective.—It may also suggest that you are going to have to pace yourself and your class. Fine. But remember: it is far more important to complete the conceptual framework—present the whole picture—than to exhaust any one particular category.

You can now use the same situation to develop objectives within each new Strand and recognize that each time you radically change subjects or locations you are essentially starting anew. You probably think you don't have time to do this. But don't cut up the site

into separate isolated experiences. Build on what you have.

Last and most important: every time you make a point or observation at the NESA, reinforce it with a comparison from the student's daily environment. Search for parallels, for corollaries—constantly.

Environmental education teaches by analogy.

AS SIMPLE CLASSIFICATION

Teachers and students have found that using the Strands for simplification of classification—essentially, as labels—is by far the easiest, least complicated approach. A particular situation or characteristic might be pointed to, say, "as a good example of interaction and interdependence." A lichen would be an example, or the relationship between farming communities and manufacturing ones. As can be seen, it is unlikely that a child would find a use like this one difficult.

Using the Strands in this way has drawbacks, however. This method sometimes merely reinforces our previous thinking. The more elusive Stands —particularly non-cyclical Change—are often neglected.

As a safeguard, it is a good idea to apply the other Strands to each example of the particular Strand being considered. If Change is being discussed, see if that example is similar to or different from change somewhere else, or under different conditions or times. Then see if any patterns to the change are evident, or if what is changing fits into a larger pattern. The continuity can be discussed, as can the interaction and interdependence, or the evolution and adaptation.

If this cumulative use of the Strands is applied to the simple label, we are essentially looking at the same thing from many different viewpoints—something valuable in itself.

do it

Now it is time to start.

You were warned at the beginning that this is a grassroots program. That means it happens at the local, community level; that you—and people like you—are responsible for running the program in your area.

You develop it, you maintain it. Your imagination, flexibility, and initiative will lead to the programmatic innovation that will mold the NESA program to fit the needs of your community.

This is not to say that you will receive no help. The National Park Service is eager to assist you, and you very likely will be able to obtain additional assistance from other federal, state, and local agencies. But basically, the program is in your hands.

This is as it should be. No program run at a distance and with national uniformity can possibly be sufficiently sensitive to local requirements. And certainly no written material can possibly replace the knowledge and concern of the teacher, the resource manager, and the citizen, for the students, the community, and the environment. As with education, in this program experience gained is the best asset, with people-to-people mutual assistance and cooperation a close second.

From experience, the National Park Service is convinced that this program can and will become whatever you make it. In some places it has failed; in others it has invigorated the existing curriculum; in still others, it has served as the focus for environmental awareness and responsible environmental action for the entire community.

Similarly, the Strands have been shown to be remarkably flexible, permitting the user to go as far as his initiative and imagination will permit. Or, they have been employed with an inflexibility truly amazing in light of words like "change," "interrelation," and "adaptation." It is up to you to eliminate this kind of abuse.

Teachers who want to use a NESA

- for environmental education
- as a flexible, interdisciplinary tool
- to bring additional life to the existing curriculum

should first find out if there is an active NESA site nearby. ("Nearby" usually means within an hour's drive.) If you know of one, contact the NESA Coordinator. Or, if the NESA is located on National Park Service lands, call the Park Superintendent and tell him of your interest. He will put you in touch with the designated NESA Coordinator.

If you do not know of any NESAs in your area, write the Regional Environmental Education Specialist, National Park Service, of the NPS Region within which your state is lo-

cated. Request the names, addresses, and phone numbers of nearby NESAs, and the name of the NESA Coordinator.

Ask the Coordinator for copies of any of the materials, including the Teacher's Guide, developed there. Tell him you would like to attend a teacher workshop. (It is the responsibility of the Regional Environmental Education Specialist to make sure that regular workshops are held at each NESA.) These workshops introduce you to the potential of the particular site, and to the NESA techniques and materials.—You are on your way.

ESTABLISHING A NESA

If no NESA exists in your area, start one. Anyone—teacher, resource manager, concerned citizen—can begin an environmental study area. As was pointed out earlier, any site with educational potential, and adequate sturdiness, facilities, and access can be used. The National Park Service, of course, is eager to make its areas available to the public for environmental education. But, if there are no NPS areas within your locality, any appropriate site—public or private—may be used to develop a program and to acquire NESA designation.

The chart which follows is an abbreviated outline of the typical evolution of an environmental study area program.—A "NEEL" is a National Environmental Education Landmark: A NESA of extraordinary quality, reflected by an excellent program as well as by an excellent site—that has been approved by the Secretary of the Interior for landmark status.

Progressive Steps: ESA through NESA to NEEL

ESA:

—Idea considered by planners.
—Planners seek aid from NPS, Office of Education, National Education Association, and other groups.
—Planners attend mini-workshop (2-3 hours) with NPS or other qualified person for guidance.
—Plan presented to community representatives.
—Plan approved; developed.
—Workshop held for teachers.
—Materials prepared; class use begins.

NESA:

—Application filed with OE; * application evaluated; approved by OE Advisory Board.
—Listed in Catalog published by OE along with other ESAs that qualify for NESA designation.
—Catalog reviewed by NPS; potential NEELs selected.
—Nominations for NEEL status evaluated by appropriate Federal Advisory Board; those selected nominated to Secretary of Interior; approved by Secretary.

* Sample OE application form, plus the address to which it should be sent, is in appendix.

NEEL:

—Designation offered to site; accepted.
—Notification to NESA by NPS with dedication offer; response made.
—Dedication planned; held; certificate and plaque awarded.
—Listed in Government Printing Office publication, "National Parks and Landmarks"; also designated as a NEEL in NESA Catalog.
—Annual check made by NPS state coordinator.

USING THE COMMUNITY

In starting this NESA, avoid becoming indispensable. If the weight of the program falls exclusively upon your shoulders, many people who could have been actively involved in creating the NESA will be merely looking on from the sidelines—some of them cynically.

Remember: In this world of process, there are always more reasons *not* to do something than to do it. Those people on the sidelines—whose acquiescence, permission, or support you undoubtedly some day will need—will find it very easy to poke holes in your work if they have no personal, creative involvement in the NESA's establishment.

Also, these people will have valuable insights you may not have thought about.

Furthermore, if you should become indispensable, and then some day move from the community, the NESA program will probably collapse: No one else will know enough about it to hold it together!

The most important reason you cannot permit yourself to become indispensable, however, is the seriousness of the situation. Environmental edu-

cation is not being pushed by the NPS as an alternative to a bridge club. Environmental awareness must be disseminated to as many people as possible because our communities—the world, for that matter—are being seriously threatened by environmental degeneration.

So, *use the community!* Involve as many people as you can in the creation, maintenance, and evolution of your NESA program.

THE STEERING COMMITTEE

The first step toward community involvement is the establishment of a steering committee. Usually, these committees are quite small, containing no more than five members. Often, the members are recruited from among personal friends, or those with a known interest in environmental affairs or education.

It is important to include at least one educator and one resource manager on the committee. Consider for other members:

- an environmentalist, conservationist, ecologist, or an outdoor education person
- a social science teacher, a natural science teacher, and/or a humanities teacher
- a school administrator
- a person involved in service clubs or the PTA
- anyone who is *really* interested.

This steering committee will conduct the preliminary investigation of the potential NESA

in your community. As it is an informal committee, it is not necessary for you to worry at this point about formal channels and protocol. So choose people willing to consider the establishment of a NESA program.

Additionally, if your resource person is not with the National Park Service, contact the NPS Regional Environmental Education Specialist for assistance. You will probably require his or an NPS representative's advice in the initial steering committee meeting. (His assistance undoubtedly will also be useful later when the program is presented to the school and resource authorities.)

If you were unable to distribute copies of this guide in advance to committee members, briefly explain the highlights of the program. Or, if an NPS representative is available, consider having him do this (Incidentally, you may photocopy as much of the guide as is necessary.)

Among yourselves, come to terms with the meaning of environmental education, and with the needs and resource existing in your community.

Additional, possible agenda topics for the initial meeting are:

1. Determination of potential of the program in the community.

a. Are the possible NESA sites easily accessible for sufficient numbers of students? (Usually, a one-hour drive to a NESA each way is acceptable; anything longer might be too tiring.)

b. Are there enough teachers available in the area for a workshop?

c. Can other resources, such as service clubs, environmental organizations, youth groups, and college students be used for assistance?

2. Delineation of responsibilities of the resource managers and educators. (Each has specific duties at this stage of the program.)

Resource managers

a. Oversee the site survey.
b. Schedule visits.
c. Organize teacher workshops.
d. Offer technical assistance to teachers.
e. Remember you are not responsible to teach.

Educaters/Teachers

a. Be responsible for students while at site.
b. Evaluate pre-site and post-site expectations.
c. Be responsible for all major educational aspects of program.

Two responsibilities are to be shared by the resource manager *and* the teacher:

1. Development of lessons and teacher guide book.

2. Final decision on NESA sites.

At the close of this first meeting, summarize what was discussed. It would be a good idea at this point to decide that the next meeting would attempt to draw up a list of 5–10 potential NESA sites in your community.

Remember that the Strands may be used in surveying these sites initially in order to determine environmental education potential. Later, as the selection narrows, they can be rigorously applied. The most important characteristics to look for, however, in this cursory survey are:

Variety.—As rich and as diverse an environment as possible with *many* characteristics.

Interrelation.—Evidence of interrelation is the most important thing to look for, since the clearest environmental lessons take place where interrelationships exist.

Interdependence.—It is unlikely that you will be able to uncover a small site which demonstrates a total natural or cultural system—yet food chains, cultural process, etc. should be visible.

Important: Be sure that the student will be able to see how *he* is interrelated with what is going on here. The site should have applicability to living, to the on-going classroom curriculum; it should enable flexible usage, and should permit active involvement by the students.

Change.—Evidence of change—particularly of the non-cyclical type—will probably improve educational possibilities.

Again we state: Nearly any site may be used as a NESA. Nonetheless, a site which exhibits *some* influence by man is usually preferable to a purely natural area, since its educational relevance is greatly in-

creased and its dynamism is usually more evident. Possible exceptions include areas exhibiting spectacular geologic change.

Remember, NESAs are not necessarily pretty or picturesque areas. Dumps, sewage treatment plants, highways with easements, forests and meadows, meadows and ponds, farms, schools and other buildings, places exhibiting processes of government, industry, or some other aspect of culture—all these might make excellent NESAs.

So would historic sites and monuments. These places have immense environmental education potential since the site itself usually had a great deal to do with molding the events which took place there. So use these areas as *historic* sites. Often we find that well-meaning individuals, under the mistaken impression that "environment" means nature or ecology, attempt to utilize historic sites primarily to teach natural sciences. Environment is **everything** around us. Analyze and use each site for what it is and what it can convey.

COMMUNITY COUNCIL FOR ENVIRONMENTAL EDUCATION

If a NESA, upon consideration of local conditions by the steering committee, would make a contribution to environmental awareness in your community, it is time to pre-

sent the idea to the appropriate decision-makers. If you are fortunate, some of these people will already be on the steering committee. Otherwise, the steering committee should present its research and plans to the appropriate decision-makers.

In some areas, it has been very helpful to expand the steering committee at this point to include school and resource decision-makers as well as key civic leaders. This committee, usually called something like "the Community Council for Environmental Education," can be an enormous asset. Its membership can include such a range of expertise that the actual structuring and establishment of the NESA program can be accomplished with ease. Furthermore, the Council can remain as a standing committee, overseeing and revising the program for years to come.

Invite a balanced group; include in your consideration the key local officials listed in the last section. Committees larger than 15 or 20 become unwieldy.

Among the arguments which have appealed to these key people are the following:

• *Educators* are pleased to discover that the program is not expensive; it is flexible enough to cater to teachers' needs; it is interdisciplinary; it is student-centered; *it is not a simple field trip, but a real part of the existing curriculum;* it provides stimulating learning opportunities which school children enjoy and appreciate; it addresses the educational responsibility to the future for an environment of quality.

• *Resource managers* are, of course, equally aware of the need to avoid a nationally despoiled environment; the program protects their resource since it increases the local environmental awareness; the program does not remove the site from its traditional use; it is a practical program, since classes are increasingly being brought to resources for field trips, but *in this program their manpower is not tied up,* they do not act as tour guides, because teachers familiar with the site are doing the teaching.

• *Civic groups, service clubs, and the business community* recognize that the program offers the considered, responsible education necessary to bring about the enlightened change they know to be essential; the program offers an opportunity for these groups to assist in community improvements; and the program provides national recognition for their efforts with inclusion in the U.S. Office of Education's NESA Catalog.

• *Environmental groups* are, of course, deeply concerned about the quality of the environment and will appreciate the opportunity to help.

If you are unable to begin such a council at this point, or if it is decided that one would be unnecessary, you must still, of course, present the program to resource and educational decision-makers. Observe protocol and proper channels. Attempt to have the educators of the steering committee present the program to the educational community; the resource people to the resource managers. Remember to respect the prerogatives of these people.

• *Be prepared to discuss* the following:

1. Human history of the study area.
2. Natural history of the study area.
3. Use of the study area in elementary and secondary school curricula.
4. Use of the study area for the whole community.

• Also *remember to mention* that:

1. NESAs provide dissemination of the current understandings about man and his environment.
2. NESA's provide a variety of approaches to the environment.
3. NESA materials encourage awareness of environmental relationships.
4. NESA programs stimulate intellectual and perceptual responses.
5. NESAs serve as demonstration and information centers for other possible NESA areas.

Speaking of respect: many localities already have on-going programs of conservation or outdoor education, many of which are excellent. The NESA program should not compete with these activities. Instead, the NESA program should complement these—just as it should complement the existing school curriculum rather than become a new one.

ON-SITE WORKSHOP

After the formation of the Council, or the presentation of the program to the appropriate officials, an on-site workshop should be held at the intended NESA for the Council or the officials.

The workshop guide will provide practical assistance—particularly logistical—in arrang-

ing this workshop. This workshop should include a more intensive site survey utilizing the insights of all the workshop participants. The Strands again should be the guidelines. The purpose of this survey is to convince the participants of the potential of the NESA program and to utilize the diverse expertise available as a preparation for the writing of the Teacher's Guide. So be sure all the ideas which are developed are written down (or taped) and saved!

The "brainstorming" technique, discussed in the Workshop Guide, is an excellent method for this site survey and analysis.

The most important aspect of this workshop will be the analysis of the site potential *in terms of the on-going school curriculum.* Teachers and curriculum specialists, with the assistance of the site's resource manager, should develop various ways the site can be used to the best advantage in *all* classes and disciplines.

Using these ideas, the steering committee can later develop the inventory, the preliminary Teacher's Guide, and a few model lesson plans for pilot usage. Materials in the *Best of NESA* reports should prove helpful to this end. Incidentally, at any point in the site survey, it may be quite helpful to involve local college or high school students.

After the site has been pilot-tested, final permission for use as a National Environmental Study Area should be obtained from the school and resource officials responsible. The Inventory and Application forms should then be filled out and sent to the Office of Environmental Education, U.S. Office of Education, Department of Health, Education, and Welfare, Washington, D.C. (Copies of these forms will be found at the end of this guide).

Next, a teacher workshop should then be held at the site for interested teachers, as outlined in the Workshop Guide. Be sure to include a thorough introduction to the characteristics of the site, its application to classroom activities, and an introduction to the use of the Strands in on-site, pre-site, and post-site activities. This on-site orientation should give you an opportunity to introduce the coordinators and/or teachers to the logistics of the program:

Scheduling visits for student groups;

Arranging dates, follow-up notifications, mailing plans, and site reservations;

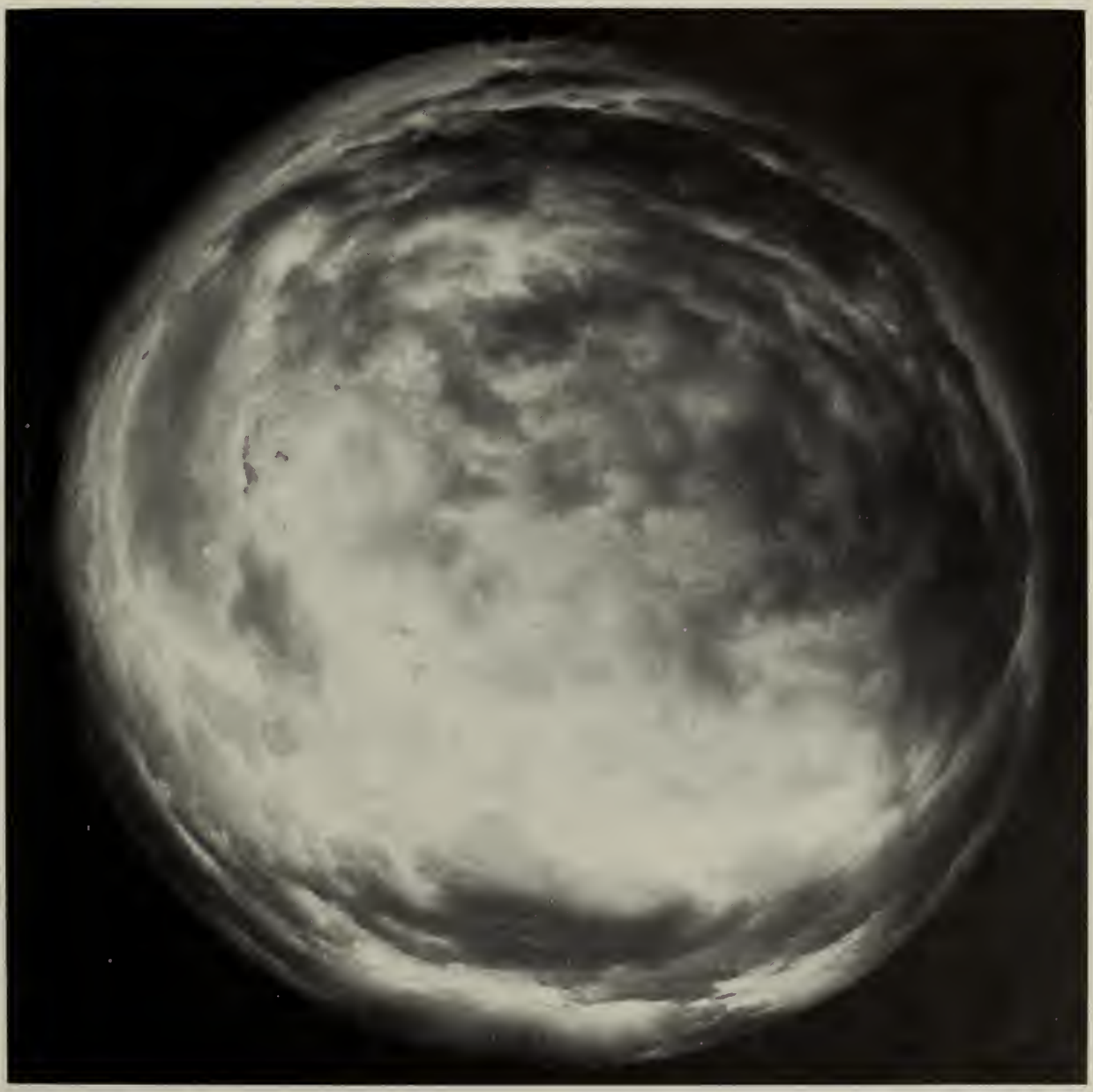
Selecting/ordering materials for pre-site, on-site, and post-site use; and

Suggesting available audio-visual aids for class use.

PROGRAM MAINTENANCE

Your NESA program should not be difficult to maintain if you have a Community Environmental Education Council. Quarterly reports (see copy in Appendix) are prepared for the NPS records. Workshops for new teachers are held and conducted by teachers experienced in NESA use. Revision of your Teacher's Guide, generated from new ideas and experiences, is suggested. (Therefore, make your initial guide inexpensive and easily revisable.)

Finally, the site can be a springboard—a model—for additional NESAs in your area. A few sites with a variety of environmental characteristics will enrich your program.



appendix

KEY PEOPLE/ORGANIZATIONS IN YOUR LOCAL/STATE COMMUNITIES WHOSE HELP WILL BE INVALUABLE

Note: Please use the spaces following specific positions and organizations for the names, addresses, and phone numbers of the persons holding the positions, or the contacts you develop within the organizations.

1. **National Park Service Staff.** (Note: The first three positions below fall under the generic title, Park Ranger.)

   a. Historian:

   _____

   _____

   _____

   b. Interpreter:

   _____

   _____

   _____

   c. Naturalist:

   _____

   _____

   _____

   d. Park Policeman:

   _____

   _____

   _____

2. Educators, such as

   a. Curriculum consultant:

   b. Curriculum coordinator:

   c. Principal:

   d. Teachers:

3. Education-related groups, such as

   a. Local chapter of National Education Association:

b. Parent-Teacher Association Officers:

c. School Board:

4. Environmental action groups:

5. Conservation organizations:

6. Ecology centers:

7. Camping association:

8. Park Department:

9. Recreation Department:

10. Water Resources Department:

11. Zoning boards:

12. City Council:

13. Political organizations/politicians:

14. Chamber of Commerce:

15. Historical associations:

16. Museums:

17. Service clubs (such as Rotary, Elks, Lions, etc.):

18. Youth-oriented groups:

19. Game, wildlife, and sport fisheries agencies:

20. Local U.S. Forest Service Staff:

21. Local Bureau of Land Management Staff:

22. Additional, local contacts that you develop:

REGIONAL OR NATIONAL ASSISTANCE

MAY BE OBTAINED FROM:

1. *The National Park Service*
   (a) Director
   National Park Service
   U. S. Dept. of Interior
   Washington, D. C. 20240
   (b) *Regional Environmental Education Specialists*
   National Capital Parks
   1100 Ohio Drive, S.W.
   Washington, D. C. 20242
   Northeast Regional Office
   143 S. Third St.,
   Philadelphia, Pa. 19106
   Southeast Regional Office
   3401 Whipple Ave.
   Atlanta, Georgia 30344
   Midwest Regional Office
   1709 Jackson St.
   Omaha, Nebraska 68102
   Southwest Regional Office
   P. O. Box 728
   Santa Fe, New Mexico 87501
   Western Regional Office
   P. 0. Box 36063
   San Francisco, Calif. 94102
   Pacific Northwest Regional Office
   4th & Pike Bldg., Rm. 931
   Seattle, Washington 98101
2. Bureau of Land Management
   Department of the Interior
   Washington, D.C. 20240
3. Office of Environmental Education
   Office of Education
   Department of Health, Education & Welfare
   Reporters Bldg., 7th & D Sts., S.W.
   Washington, D.C. 20202
4. U.S. Forest Service
   Department of Agriculture
   Washington, D.C. 20250
5. UNESCO
   515 22nd St., N.W.
   Washington, D.C. 20037

National Organizations

6. *Additional national groups whose assistance may be helpful.*

Center for Law and Social Policy
20008 Hillyer Place
Washington, D.C. 20009

Center for the Study of Responsive Law
Box 19367
Washington, D.C. 20036

Conservation Foundation
1717 Massachusetts Ave., N.W.
Washington, D.C. 20036

Environmental Action
Room 731
1346 Connecticut Ave., N.W.
Washington, D.C. 20036

Environmental Defense Fund
1901 N. Street, N.W.
Washington, D.C. 20036

Friends of the Earth
451 Pacific Avenue
San Francisco, Calif. 94133

Izaak Walton League
1326 Waukegan Road
Glenview, Ill. 60025

National Audubon Society
1130 Fifth Avenue
New York, N.Y. 10038

National Parks Association
1701 18th Street, N.W.
Washington, D.C. 20009

National Recreation and Parks Association
1700 Pennsylvania Ave., N.W.
Washington, D.C. 20006

National Wildlife Federation
1412 16th Street, N.W.
Washington, D.C.

Nature Conservancy
1522 K Street, N.W.
Washington, D.C.

Planned Parenthood
515 Madison Avenue
New York, N.Y. 10022

Sierra Club
Mills Tower
San Francisco, Calif.

Wilderness Society
729 15th Street, N.W.
Washington, D.C. 20005

Zero Population Growth
330 Second Street
Los Altos, California 94022

bibliography

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Ardrey, Robert. *African Genesis.* New York: Dell Publishing Co., Inc., 1968. pp. 364. Paper, $.95.

Bates, Marston. *The Forest and the Sea.* New York: Random House, 1960. pp. 262.

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Sax, Joseph L. *Defending the Environment, A Strategy for Citizen Action.* New York: Alfred A. Knopf, 1971. pp. 252. Cloth, $6.95.

Shepard, Paul and McKinley, David, editors. *The Subversive Science.* Boston: Houghton Mifflin Company, 1969. pp. 439. Cloth, $8.95.

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U. S. Department of the Interior: Conservation Yearbooks.

—*It's Your World.* Washington, D.C.: Government Printing Office, 1969. $2.

—*Man . . . An Endangered Specie?* Washington, D.C.: Government Printing Office, 1968. $1.50.

—*The Population Challenge.* Washington, D.C.: Government Printing Office, 1966. $1.25.

—*Quest for Quality.* Washington, D.C.: Government Printing Office, 1967. $2.

—*The Third Wave.* Washington, D.C.: Government Printing Office, 1965. $1.

Von Eckardt, Wolf. *A Place to Live—the Crisis of the Cities.* New York: Dell Publishing Co., 1969. pp. 405. Paper, $2.65.

Films available on loan from the office of environmental interpretation, National Park Service, U. S. Department of the Interior, Washington, D.C. 20240.

Another World, Another Me: (NEED Film). Harpers Ferry Historical Association, P. O. Box 147, Harpers Ferry, West Virginia 25425.

Buddhism, Man and Nature: Hartley Productions, 279 East 44th Street, New York, New York 10017.

Children and Trees: Harpers Ferry Historical Association, P. O. Box 147, Harpers Ferry, West Virginia 25425.

Conducted Tours: Harpers Ferry Historical Association, P.O. Box 147, Harpers Ferry, West Virginia 25425.

Fingerpainting: No. 1 Environmental Awareness; No. 2 Here We Are. Harpers Ferry Historical Association, P. O. Box 147, West Virginia 25425.

For All to Enjoy: Conservation Foundation, 1717 Massachusetts Avenue, N.W., Washington, D.C. 20036.

Green Years: Center for Urban Education, 105 Madison Avenue, New York, New York 10016.

It's Your World: National Park Service, U. S. Department of the Interior, Washington, D.C. 20240.

A Matter of Time: Conservation Foundation, 1717 Massachusetts Avenue, N.W., Washington, D.C. 20036.

Multiply and Subdue the Earth: Field Services, Indiana University, Audio Visual Center, Bloomington, Indiana 47401.

The Myths and the Parallels: Association Films, Inc., 600 Grand Avenue, Ridgefield, New Jersey 07657.

Pandora's Easy Open Pop Top Box: National Medical AV Center (Annex) Station K, Atlanta, Georgia 30324.

The Proud New Yorkers: Consolidated Edison, 4 Irving Place, New York, New York 10003.

PSSSHT: Fisher-Slezas Films, Inc., 218 Cambridge Street, Boston, Massachusetts 02114.

Rise and Fall of the Great Lakes: Pyramid Films, Box 1048, Santa Monica, California 90406.

Why Man Creates: Pyramid Films, Box 1048, Santa Monica, California 90406.

World Population—1000 BC–1965 AD: Southern Illinois University, Carbondale, Illinois 62901.

Films available from McGraw Hill, 330 West 42nd Street, New York, New York 10036.

Cities of the Future: 25 minutes. Urbanization and worsening conditions of pollution, slums, congestion. Creative planning examples: Brazil's "clean-slate" approach, Philadelphia's "Constructive Restoration." Ideas: weather-proofed cities, megastructures, multilevel and floating structures. McGraw Hill, 330 West 42nd Street, New York, New York 10036.

Four-Day Week: 25 minutes. The environmental implications of the increasing leisure time available to Americans. McGraw Hill, 330 West 42nd Street, New York, New York 10036.

Games Futurists Play: 30 minutes. The novel planning technique of "gaming" as explored in an imagined San Diego situation. McGraw Hill, 330 West 42nd Street, New York, New York 10036.

Life in the Woodlot: (National Film Board of Canada.) 17 minutes. Within a few acres of woods, left standing in the midst of cultivated farmland, the camera reveals the complete interrelation of life cycles of man, animal and plants. First person narration of farmer who gets firewood, maple syrup, and good hunting from his woods. McGraw Hill, 330 West 42nd Street, New York, New York 10036.

Sense of Wonder: 60 minutes. Environmentalist themes from author Rachel Carson and photographer Ansel Adams. McGraw Hill, 330 West 42nd Street, New York, New York 10036.

Silent Spring: 60 minutes. The Rachel Carson classic which may well be the key document of the age of the Environment. McGraw Hill, 330 West 42nd Street, New York, New York 10036.

Tomorrow's World/Man and the Sea: 52 minutes. Thoroughly researched and competently produced film shows marine science in terms of advances in oceanography, new techniques for tapping ocean for food, etc. McGraw Hill, 330 West 42nd Street, New York, New York 10036.

What are We Doing to Our World? 27 minutes. Two-part examination of the way in which technology is altering environment; pleads for conservation. (1) Lake Erie and (2) New Hampshire, Florida Everglades ecosystems are studied. McGraw Hill, 330 West 42nd Street, New York, New York 10036.

Other Films Available

Noise Room: 26 minutes. From jackhammers to rock music, noise continues to take a greater toll on man's hearing and peace of mind. NBC Educational Enterprises, Inc. 30 Rockefeller Plaza, Room 1040, New York, New York 10020.

Survival on the Prairie: 53 minutes. The destruction and reconstruction of the delicate balance of life of the great American grassland. NBC Educational Enterprises, Inc., 30 Rockefeller Plaza, Room 1040, New York, New York 10020.

A *Child Went Forth:* 20 minutes. A moving statement concerning the effects of our environment on learning and the will to learn. Not meant for children's viewing as much as it is meant for teachers, school boards, architects, and all those involved in educatects, 1735 New York Avenue, tion. American Institute of Archi- N.W., Washington, D.C. 20006.

The Rebels/271—Ecology of Design: 16 minutes. Band of students constructs a free-form city in the wilderness, determined to create an environment on the scale of man. Through their city of personal structures, the students—guided by their teacher—discover themselves. King Screen Productions, 320 Aurora Avenue, North, Seattle, Washington 98109.

An Approach to School Site Development: 19 minutes. 16mm, sound color. International Film Bureau, 332 South Michigan Avenue, Chicago, Illinois 60604.

How Will We Know It's Us? 27½ minutes. A plea for enough preservation to maintain our historical perspectives in a society where progress and change are equated. Modern Talking Picture Services, Inc., 1212 Avenue of the Americas, New York, New York 10036.

The Searching Eye. 17 minutes. Stresses need to contemplate and understand our surroundings. Pyramid Films, Box 1048, Santa Monica, California 90406.

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National Park Service,
pp. 9, 9, 10, 12, 13, 15, 17, 17, 19, 21, 22, 23, 24, 25, 27, 27, 30, 30, 31, 32, 40, 42.

David Arnold,
pp. 11, 16, 20, 32 bottom.

Jonathan Hadary,
5, 26, 32 side, 33, 33, 33.

Kim Herter,
pp. 45.

Carol-Lynn Glassman,
pp. 23.

Robin Moyer,
pp. 9 top, 31 top, 37, 44.

Simon Siegl,
pp. 29.

* U.S. GOVERNMENT PRINTING OFFICE: 1972 O—469—326

APPLICATION FOR NESA CATALOG

To be considered for inclusion in the National Environmental Study Area *(NESA)* Catalog, please submit two copies of the application to

OFFICE OF ENVIRONMENTAL EDUCATION
U.S. Office of Education, DHEW
400 Maryland Avenue, SW.
Washington, D. C. 20202

Retain one copy of the application for your files.

If additional space is needed, use extra sheets. Number each item answered.

Enclose with this application one copy of each set of resource or teaching materials that are regularly used by site administrators. If schools have their own materials, please submit a copy of each school's materials.

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
OFFICE OF EDUCATION
WASHINGTON, D.C. 20202

O.M.B. NO. 51—RO935
APPROVAL EXPIRES : 9/30/75

FOR OFFICE OF EDUCATION USE ONLY

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P.L. 91–516

1. SITE NAME

RECORDED IN LOGBOOK *(Date and number)*

2. ALTERNATE NAMES OF SITE *(if any)*

RESOURCE AND/OR TEACHING MATERIALS RECEIVED ☐ YES ☐ NO

ADDITIONAL MATERIALS RECEIVED ☐ YES ☐ NO

3. SITE LOCATION

4. OPERATED BY, IF OTHER THAN SITE NAME

5. ADDRESS *(of No. 3 above; number, street, city, county, State, and ZIP code)*

6. TELEPHONE *(Area code, number, and extension)*

7A. HOURS AND DAYS SITE IS OPEN TO PUBLIC

B. ADMINISTRATION OFFICE HOURS, IF DIFFERENT

7. DIRECTOR

8. NAME AND TITLE OF PERSON MAKING APPLICATION, IF OTHER THAN DIRECTOR

9. ADDRESS, IF DIFFERENT FROM NO. 5 ABOVE

10. DESCRIPTION OF SITE

11. HOW IS THE SITE FINANCED

A. FOR MAINTENANCE

B. FOR EDUCATIONAL ACTIVITIES

12. SIZE IN ACRES

13. *Attach a Site location map. Use map similar to ones used by auto service stations. If area is in a city and a city map is available, please indicate location.*

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BY PRIVATE CAR, BUS, OR TAXI, OTHER _____ *(circle one)*

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16. PROGRAM DESCRIPTION

17. DO YOU USE IN CONJUNCTION WITH YOUR PROGRAM TEACHING MATERIALS RELATING MAN TO THE ENVIRONMENT *(e.g. displays, pamphlets, booklets, texts, etc.)?* ☐ YES ☐ NO

IF "YES," PLEASE ATTACH THE FOLLOWING — COPIES OF THE PRINTED MATERIAL *(e.g. mineographed sheets, pamphlets, booklets. Please do not forward any standard texts but attach a list of the names and authors of such texts)* LISTS OF EQUIPMENT USED, DISPLAYS, AND ANY OTHER INSTRUCTIONAL MATERIALS. INCLUDE A PARAGRAPH OR TWO FOR EACH LIST ON HOW THE TEACHING MATERIALS ARE USED TO RELATE MAN TO THE ENVIRONMENT.

18. WHAT GRADES ARE PROGRAMS DIRECTED TOWARDS? *(circle each)* K 1 2 3 4 5 6 7 8 9 10 11 12

A. DURING REGULAR SCHOOL YEAR ☐ YES ☐ NO B. DURING SCHOOL HOURS ☐ YES ☐ NO

C. WEEKENDS AFTER SCHOOL HOURS ☐ YES ☐ NO D. DURING SUMMER MONTHS ☐ YES ☐ NO

19. NAME OF SCHOOL DISTRICT A. ADDRESS B. KEY CONTACT

20. DO YOU HAVE PROGRAMS FOR TEACHER TRAINING? ☐ YES ☐ NO IF "YES," EXPLAIN.

21. DO YOU HAVE PROGRAMS FOR UNIVERSITY STUDENTS? ☐ YES ☐ NO IF "YES," GIVE

A. NAME OF UNIVERSITY OR COLLEGE	B. DEPARTMENT	C. IS CREDIT GIVEN	D. WHAT IS EMPHASIS OF PROGRAM

E. IS COURSE TAUGHT BY YOUR STAFF, THE COLLEGE STAFF, OR A COMBINATION OF BOTH? *(circle one)*

22A. DO YOU HAVE OTHER CONTINUING/ADULT EDUCATION PROGRAMS

FOR INDIVIDUALS ☐ YES ☐ NO FOR SERVICE CLUBS ☐ YES ☐ NO

FOR SPECIAL GROUPS ☐ YES ☐ NO OTHER *(specify)*

22B. WHAT IS EMPHASIS OF PROGRAM?

23. IF PROGRAM SITE HAS THE FOLLOWING, DESCRIBE

A. FEATURES THAT LEND THEMSELVES TO ILLUSTRATING MAN'S RELATIONSHIP TO HIS ENVIRONMENT

B. AN OVERALL "STURDINESS" SUFFICIENT TO OFFER A WIDE RANGE OF EDUCATIONAL OPPORTUNITY WITHOUT IMPAIRMENT OF THE ESSENTIAL INTEGRITY OF THE ENVIRONMENT

C. LOCATION AND FACILITIES THAT MAKE IT CONVENIENT FOR REGULAR USE AS PART OF CURRICULUM-RELATED EDUCATION PROGRAMS BY AREA SCHOOLS

24. DO YOU USE A CONCEPTUAL "STRAND" APPROACH IN YOUR PROGRAM? ☐ YES ☐ NO *("Environmental Strands" are basic concepts that run through the web of life and give it the satisfying order that is sometimes called "balance of nature." For example: Variety and Similarity, Patterns, Interrelation and Interdependence, Change and Continuity, and Adaptation and Evolution are environmental strands presently being used in some programs. More information is available from Office of Environmental Interpretation, National Park Service, U.S. Department of Interior, Washington, D.C. 20240)*

25. ADDITIONAL INFORMATION ON ENVIRONMENTAL EDUCATION PROGRAMS OFFERED.

GPO 933-091

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
OFFICE OF EDUCATION
WASHINGTON, D.C. 20202

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FOR SPECIAL GROUPS ☐ YES ☐ NO OTHER *(specify)*

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25. ADDITIONAL INFORMATION ON ENVIRONMENTAL EDUCATION PROGRAMS OFFERED.

GPO 933-091

As the Nation's principal conservation agency, the Department of the Interior has basic responsibilities for water, fish, wildlife, mineral, land, park, and recreational resources. Indian and Territorial affairs are other major concerns of America's "Departmental of Natural Resources." The Department works to assure the wisest choice in managing all our resources so each will make its full contribution to a better United States—now and in the future.

Rogers C. B. Morton, Secretary
U.S. Department of the Interior

George B. Hartzog, Director
National Park Service

U.S. DEPARTMENT OF THE INTERIOR • NATIONAL PARK SERVICE